Geometry honors

Problem sets

**PS 1:**

*Solve for indicated variables. Leave all answers in exact form.*



1. 2.



3.



**PS 2:**

1. Shoe that the triangle with vertices A(-3,4), M(3,1), and Y (0,-2) is isosceles.

2. Quadrilateral TAUL has vertices T(4,6), A(6,-4), U(-4,-2), and L(-2,4). Show that the diagonals

are congruent.

3. Triangles JAN and RFK have vertices J(-2,-2), A(4,-2), N(2,2), R(8,1), F(8,4), and K(6,3). Show

that trangles JAN and RFK are similar.

4. There are 12 points, each with integer coordinates, that are 10 units from the origin. List the points.

*In 5-7, decide what type of quadrilateral HIJK is. Then prove that your answer is correct.*

5. H(1,2) I(2,-3) J(-2,-1) K(-4,3)

6. H(7,5) I(8,3) J(0,-1) K(-1,1)

7. H(-3,-3) I(-5,-6) J(4,-5) K(6,-2)

8. Use the coordinates from the appropriate problem above to show the diagonals of a rectangle are

congruent.

9. Use the coordinates from the appropriate problem above to show the diagonals of a rhombus are

perpendicular.

**PS 3:**

*Supply the missing coordinates without introducing any new variables.*

1. POST is a square 2. Parallelogram

3. Isosceles trapezoid



4. Use the diagram below to prove the median of a trapezoid:

a) is parallel to the bases

 b) has a length equal to the average of the base lengths

5. Prove that the figure formed by joining, in order, the midpoints of the sides of quadrilateral ROST is

 a parallelogram.

**PS 4:**

*Solve for all variables. Fine exact answers where possible. Round to the nearest hundredth where necessary.*

1. 2. 3.





4. 5. 6.

7. The diagonals of a rectangle are 8 units long and intersect at a 60 degree angle. Find the dimensions

of the rectangle.

8. Supply the missing coordinates to prove: The segments that join the midpoints of opposite sides of

any quadrilateral bisect each other. Let H, E, A, and R be the midpoints of the sides of quadrilateral

 SOMK.

a) R has coordinates (\_\_\_\_\_, \_\_\_\_\_)

b) E has coordinates (\_\_\_\_\_, \_\_\_\_\_)

c) The midpoint of  has coordinates (\_\_\_\_\_, \_\_\_\_\_)

d) A has coordinates (\_\_\_\_\_, \_\_\_\_\_)

e) H has coordinates (\_\_\_\_\_, \_\_\_\_\_)

f) The midpoint of  has coordinates (\_\_\_\_\_, \_\_\_\_\_)

g) Because (\_\_\_\_\_, \_\_\_\_\_) is the midpoint of both  and

,  and  bisect each other.